

REMARKS

Reconsideration of the application is respectfully requested for the following reasons:

1. Claim for Priority

It is respectfully noted that priority of Taiwan Application 92123813, filed August 28, 2003, is properly claimed on page 4 of the Application Data Sheet submitted with the original application and referred to in the declaration. Acknowledgment of the claim is respectfully requested.

2. Rejection of Claims 1, 3-5, and 7 Under 35 USC §103(a) in view of U.S. Patent No. 6,814,832 (Utsunomiya) and U.S. Patent Publication No. 2004/0214380 (Leib)

This rejection is respectfully traversed on the grounds that the Utsunomiya patent and the Leib publication fail to disclose or suggest, whether considered individually or in any reasonable combination, a method for manufacturing a flexible panel in which:

- the **first** substrate of the panel is thinned to a predetermined thickness; and
- a **third** substrate is adhered or sealed to the **first** substrate such that the first substrate is **sandwiched** between the third substrate and a removable second substrate.

The Utsunomiya patent fails to disclose any thinning step, or the step of adhering a flexible third substrate on the first substrate. While Leib discloses thinning of a substrate, the substrate-thinning step of Leib is for the purpose of exposing contacts rather than to facilitate transfer of thin film devices formed on a glass substrate to a plastic substrate, and has nothing to do with the panel construction method of Utsunomiya.

The method disclosed by Utsunomiya is clearly different from that of the present application. Utsunomiya fails to disclose the step of thinning the first substrate and the step of sealing a flexible third substrate onto the first substrate. In fact, the method described by Utsunomiya is achieved by the process of forming a peeling layer 2 sandwiched between a insulating layer 31 (first substrate) and a element forming substrate 1, and then irradiating the

peeling layer 2 with laser light so as to form internal and/or interfacial exfoliation of the peeling layer 2 (see fig. 1A-1E, and col. 5, line 28-40).

In contrast, the method of the present application is achieved, in a surprisingly simple way, by thinning the first substrate through polishing, cutting, or etching (see page 8, line 12-18), *eliminating the exfoliation step of Utsunomiya and therefore the need to precisely control the energy of the laser light so that damage to the thin film devices otherwise caused by the exfoliation is prevented.* The problem of exfoliation greatly increases the complexity of the method disclosed by Utsunomiya, and results in a significantly lower low yield rate. It is expressly one of the objects of the present invention to overcome these drawbacks of the method disclosed by Utsunomiya (see page 1, line 20-25 and page 2, line 1-5).

The deficiencies of Utsunomiya are not remedied by the disclosure of Leib, which concerns the problem of spatial arrangement of the contacts in the MEMS module (see paragraph 0007 and 0051), and does not even remotely suggest application of thinning to facilitate device transfer in a panel of the type disclosed by Utsunomiya. Instead, the thinning taught by Leib is used solely for the purpose of exposing conductive structures. In particular, in order to achieve a particularly space-saving arrangement of the element of MEMS, Leib introduces metal-coated recesses 7 filled with a conductive material 15 into a substrate 6, and then reduces the thickness of the substrate 6 until the conductive material 15 is exposed to form contacts of the MEMS module (see paragraph 0054 and 0055).

The thinning taught by Leib has nothing to do with the panel arrangement of Utsunomiya, and cannot possibly address the problem of eliminating the need for precise control of laser light to prevent exfoliation to facilitate **transfer of thin film elements** from one substrate to another, which is one of the drawbacks of Utsunomiya's method that is solved by the present invention. In fact, it is **impossible** to transfer thin-film elements through the process for producing housed microelectromechanical components described by Leib.

The Examiner is reminded that references must be considered in the same manner that the ordinary artisan would have considered them, including consideration of the problems solved by the references and the context in which the problems are solved. As explained in MPEP 2141.02, p. 2100-107 "**A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention** (emphasis in the original)." It is respectfully submitted that when the Utsunomiya patent and the Leib publication are considered as a whole, they clearly do not suggest the claimed invention, and therefore withdrawal of the rejection of claims 1, 3-5, and 7 under 35 USC §103(a) is respectfully requested.

3. Rejection of Claim 2 Under 35 USC §103(a) in view of U.S. Patent No. 6,814,832 (Utsunomiya) and U.S. Patent Publication Nos. 2004/0214380 (Leib) and 2004/0097161 (Gourlay)

This rejection is respectfully traversed on the grounds that the Gourlay publication, like the Utsunomiya patent and the Leib publication, fails to disclose or suggest a method for manufacturing a flexible panel in which the first substrate of the panel is thinned to a predetermined thickness; and a third substrate is adhered or sealed to the first substrate such that the first substrate is sandwiched between the third substrate and a removable second substrate before removal of the second substrate.

Instead, the Gourlay publication discloses a method for manufacturing an electroluminescent device, which is achieved by assembling a transparent substrate 7 comprising electroluminescent pixels 10 and a flexible substrate 15 comprising an active electronic circuitry 14 with discrete electrical connections 17 between them (see fig. 2, abstract, and paragraph 0013-0014). Hence, the method described by Gourlay is not pertinent to the methods of Utsunomiya and Leib, and is also not analogous to that of the claimed invention, because Gourlay does not describe any steps about how to transfer a first substrate having a plurality of functional switches or conducting lines thereon onto a flexible substrate. Therefore, withdrawal of the rejection of claim 2 under 35 USC §103(a) is respectfully requested.

4. Rejection of Claim 6 Under 35 USC §103(a) in view of U.S. Patent No. 6,814,832 (Utsunomiya) and U.S. Patent Publication Nos. 2004/0214380 (Leib) and 2002/0139981 (Young)

This rejection is respectfully traversed on the grounds that the Young publication, like the Utsunomiya patent and the Leib publication, fails to disclose or suggest a method for manufacturing a flexible panel in which the first substrate of the panel is thinned to a predetermined thickness so as to facilitate transfer of thin film devices from one substrate to another, as claimed.

Instead, Young discloses a method for producing a flexible substrate, which is achieved by weakening regions of the substrate that are *away from* the areas occupied by semiconductor devices to encourage flexing of the substrate and reduce the risk of damage to the semiconductor devices (see claim 1 and fig.4). Hence, although Young discloses thinning steps, the thinning involves reduction in the thickness of a “flexible” substrate to form a flexible substrate with several thinned regions 50,52 (see fig.2, fig. 4, and paragraph 0042). This is contrary to the present invention, which addresses the problem that it is difficult to reduce the thickness of a “flexible” first substrate due to its weak support, and which therefore provides thinning before adhering of a flexible third substrate on the first substrate prior to removal of the second substrate. Therefore, Young does not suggest modification of the methods disclosed by Utsunomiya and Leib, and withdrawal of the rejection of claim 6 under 35 USC §103(a) is respectfully requested.

5. Rejection of Claims 8-13 Under 35 USC §103(a) in view of U.S. Patent Nos. 6,814,832 (Utsunomiya) and 6,861,802 (Hishida), and U.S. Patent Publication Nos. 2004/0214380 (Leib) and 2004/0097161 (Gourlay)

This rejection is respectfully traversed on the grounds that the Gourlay and Hishida publications, like the Utsunomiya patent and the Leib publication, fails to disclose or suggest a method for manufacturing a flexible panel in which the first substrate of the panel is thinned to a predetermined thickness; and a third substrate is adhered or sealed to the first substrate such

that the first substrate is sandwiched between the third substrate and a removable second substrate before removal of the second substrate.

As noted above, the Gourlay publication is directed to a method involving a transparent substrate with electroluminescent pixels and a *flexible* substrate with electronic circuitry, and which does not provide for any sort of thinning step, much less the claimed thinning of the first substrate with functional switches or conductive lines thereon. The Hishida patent, on the other hand, Hishida discloses a method for preventing moisture from entering the inner region of a electroluminescence(EL) panel, which is achieved by forming a desiccant 16 (moisture absorbent) on the surface 12b of the inner region of the sealing substrate 12 (see fig.1A, 3, and 6), and does not describe any steps about transferring a substrate. As a result, neither the Hishida patent nor the Gourlay suggests the claimed modification of the Utsunomiya panel, whether or not combined with the Leib conductor-forming method, and therefore withdrawal of the rejection of claims 8-13 under 35 USC §103(a) is respectfully requested.

6. Rejection of Claim 12 Under 35 USC §103(a) in view of U.S. Patent Nos. 6,814,832 (Utsunomiya) and 6,861,802 (Hishida), and U.S. Patent Publication Nos. 2004/0214380 (Leib) and 2002/0139981 (Young)

This rejection is respectfully traversed on the grounds that, for the reasons discussed above, the Utsunomiya and Hishida patents and the Young and Leib publications, fail to disclose or suggest a method for manufacturing a flexible panel in which the first substrate of the panel is thinned to a predetermined thickness; and a third substrate is adhered or sealed to the first substrate such that the first substrate is sandwiched between the third substrate and a removable second substrate before removal of the second substrate. As a result, withdrawal of the rejection of claim 12 under 35 USC §103(a) is respectfully requested.

7. Allowability of Claims 14-20

Claims 14-20 are allowed on pages 8-9 of the Official Action.

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Having thus overcome each of the rejections made in the Official Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

Respectfully submitted,

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